

## CLAIMS

What is claimed is:

1. A method of selecting an acoustical format for a hearing impaired user, the method comprising the steps of:
  - 5 providing a hearing aid test unit that simulates a production hearing aid to be supplied to a user; and
  - 10 coupling a selector module to the test unit whereby the user may select one of multiple electroacoustic formats.
2. A method as in claim 1, wherein the hearing aid test unit includes a disposable shell and tip.
3. A method as in claim 1, wherein the hearing aid test unit includes a disposable tip that is used to direct amplified sound into an ear canal of the user.
4. A method as in claim 1, wherein a core of the hearing aid test unit includes a microphone and speaker, and the core is removably attached to a shell.
5. A method as in claim 1, wherein the hearing aid test unit includes a reusable core and a disposable shell and tip.
6. A method as in claim 1, wherein the core and the shell are removably attached by a tab inserted through a lock mechanism of the shell, a portion of

-48-

the lock mechanism being broken when the shell and tip are separated from the core.

7. A method as in claim 1, wherein the hearing aid units are provided for both a right and left ear of a user to test different electroacoustic formats.
8. A method as in claim 1, wherein a selectable electro-acoustical format is provided in a mass produced hearing aid device having a form, fit and function similar to the hearing aid test unit.
9. A method as in claim 1 further comprising the step of:  
pressing a keypad to select one of multiple electro acoustical formats.
10. A method as in claim 9 further comprising the step of:  
providing multiple types of sample recordings so that a user can compare one format to another.
11. A method as in claim 1 further comprising the step of:  
downloading digital information from the selector module to program a corresponding acoustical format of the hearing aid test unit.
12. A selector module comprising:  
a housing in which an electronic circuit is enclosed; and

a controller for selecting one of a plurality of signal processing formats such that a user may select an optimum format for use in a corresponding production hearing aid device.

- 5 13. A selector module as in claim 12, wherein the formats are downloaded from the selector module into the hearing aid device.
- 10 14. A selector module as in claim 12, wherein the formats are encoded in the hearing aid device and the selector module provides a signal for selecting a particular format.
- 15 15. A selector module as in claim 12, wherein a set of coefficient multipliers are used to define a frequency response of the hearing aid device for a particular format.
- 16 16. A selector module as in claim 12, wherein the selector module is portable.
- 17 17. A selector module as in claim 12 further comprising:  
a keypad input for selecting a particular  
20 acoustical format.
- 18 18. A hearing aid test unit for simulating a form and fit of a corresponding production hearing aid device, the hearing aid test unit comprising:  
a core including a microphone to sense a sound  
25 input and an electronic circuit to drive a speaker based on the sound input; and

a cable including an electronic signal for selecting a frequency response of the hearing aid test unit device.

19. A hearing aid test unit as in claim 18, wherein the  
5 hearing aid test unit electronic circuit is powered through the cable.
20. A hearing aid test unit as in claim 18 further comprising:  
a shell for housing the core; and  
10 a detachable tip for directing sound generated by the speaker into an ear canal.
21. A hearing aid test unit as in claim 20, wherein the  
15 tip is separable from the core such that the core may be re-used with another tip.
22. A hearing aid test unit as in claim 20, wherein the shell is adapted to be inserted in an ear of a typical user.
23. A hearing aid test unit as in claim 20, wherein the  
20 shell is separable from the core by breaking a portion of the shell, after which the shell cannot be re-attached to the core.
24. A hearing aid test unit as in claim 18, wherein a  
25 frequency response is selected by pressing a keypad corresponding to an acoustical format.

25. A hearing aid test unit as in claim 24, wherein a frequency response is selected from a matrix of acoustical formats.
26. A hearing aid test unit as in claim 22, wherein the  
5 matrix includes  $N \times M$  acoustical formats, where  $N$  and  $M$  are both at least equal to 2.
27. A hearing aid test unit as in claim 24, wherein a cover is provided over the keyboard to prevent access to some keypads while the cover is closed.
- 10 28. A hearing aid test unit as in claim 18, wherein the cable includes a telephone connector.
29. A hearing aid test unit as in claim 28, wherein a user compares multiple formats to select an optimal format for use in a corresponding production hearing  
15 aid device.
30. A hearing aid device comprising:  
a core including a microphone and speaker to sense and amplify a sound input for a hearing impaired patient; and  
20 a removably attached component disposed in relation to a body of the core of the hearing aid device.
31. A hearing aid device as in claim 30, wherein the removably attached component is a sheath protecting  
25 the core of the hearing aid device from exposure to human tissue.

32. A hearing aid device as in claim 30, wherein the removably attached component includes a pull cord.

33. A hearing aid device as in claim 30, wherein the removably attached component is a disposable tip for directing sound into an ear of the hearing impaired patient.

34. A hearing aid device as in claim 32, wherein the pull cord of the removably attached component is provided so that a patient can dislodge said component from an ear.

35. A hearing aid device as in claim 30, wherein the pull cord of the removably attached component is provided so that the component can be secured to the core of the hearing aid device.

36. A hearing aid device as in claim 30, wherein the removably attached component is a shell for housing the core of the hearing aid device and the shell includes a locking mechanism for securing the component to the core.

37. A hearing aid device as in claim 36, wherein an indicator is provided to identify that the shell was previously used.

38. An electrically conductive lead comprising:  
a conductive strip; and  
a slit disposed on the conductive strip for attaching said conductive lead to an electrode.

39. An electrically conductive lead as in claim 38,  
wherein the slit is shaped to form at least one  
tongue.
- 5 40. An electrically conductive lead as in claim 38,  
wherein at least part of the strip is flat.
41. An electrically conductive lead as in claim 38,  
wherein the strip is used to electrically connect a  
terminal of a leaded electronic component to  
10 electronic circuitry disposed in a hearing aid  
device.
42. An electrically conductive lead as in claim 38,  
wherein the strip includes three slits that are  
disposed to form a letter H.
- 15 43. An electrically conductive lead as in claim 38,  
wherein the strip is attached to a protruding  
terminal by inserting the protruding terminal through  
the slit in the conductive strip.
44. An electrically conductive lead as in claim 38,  
20 wherein the slit is formed by an etching process.
45. An electrically conductive lead as in claim 38,  
wherein the slit is formed by a stamping process.
46. An electrically conductive lead as in claim 38,  
wherein the curled end of the conductive strip is  
25 disposed to provide force on an electrode.

-54-

47. An electrically conductive lead as in claim 38,  
wherein one end of the conductive strip is curled.
48. An assembly comprising:  
5 an electronic circuit for processing an  
acoustical input;  
a connector attached to the circuit; and  
a shell housing the connector and the electronic  
circuit to form a hearing aid device that fits in an  
10 ear.
49. An assembly as in claim 48, wherein a cable is  
attached to the connector.
50. An assembly as in claim 48, wherein the connector is  
a surface mount connector.
- 15 51. An assembly as in claim 48, wherein the connector  
includes conductive posts to which at least one wire  
is soldered for connecting a lead.
52. An assembly as in claim 48, wherein the connector  
includes at least one conductive pin receptacle.
- 20 53. An assembly as in claim 48, wherein the electronic  
circuit includes an amplifier to amplify an  
acoustical input of the hearing aid.
54. An assembly as in claim 48 further comprising:  
a transducer to which the electronic circuit is  
25 attached.



55. An assembly as in claim 54, wherein the transducer is a microphone for detecting an acoustical input.
56. An assembly as in claim 54, wherein the hearing aid device includes a speaker for generating an  
5 acoustical output.
57. An assembly as in claim 48, wherein the connector is a socket.
58. An apparatus comprising:  
a cable assembly terminated at one end by a  
10 hearing aid device; and  
an electronic circuit disposed in the cable assembly for processing an acoustical input of the hearing aid device to produce an acoustical output.
- 15 59. An apparatus as in claim 58, wherein a housing for the electronic circuit is disposed at a point along a length of the cable assembly.
60. An apparatus as in claim 58 further comprising:  
a selector module for selecting a mode of the  
20 electronic circuit and acoustical response of the hearing aid device.
61. An apparatus as in claim 60, wherein the cable is connected to the selector module by a connector at an end of the cable.

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62. An apparatus as in claim 60, wherein the selector module includes a keypad for selecting an acoustical response of the hearing aid device.
- 5 63. An apparatus as in claim 58 further comprising:  
a microphone disposed in the hearing aid device for detecting the acoustical input, whereby a signal corresponding to the acoustical input is transmitted over at least a portion of the cable to the  
10 electronic circuit for processing.
64. An apparatus as in claim 63 further comprising:  
a speaker disposed in the hearing aid device that is driven by the electronic circuit to produce an amplified output signal.
- 15 65. An apparatus as in claim 58, wherein the electronic circuit is disposed in a connector at an end of the cable assembly opposite the hearing aid device.
66. An apparatus as in claim 58, wherein the electronic circuit includes a flexible circuit board disposed in  
20 the cable assembly.
67. An apparatus as in claim 58, wherein the electronic circuit can be programmed to one of multiple acoustical formats, each of which defines a response of the hearing aid device for an entire range of  
25 audible inputs detectable by a human ear.
68. An apparatus as in claim 58, wherein the electronic circuit includes an amplifier and a filter circuit

for processing an acoustical input of the hearing aid device to generate an acoustical output of the hearing aid device.

69. An apparatus as in claim 58, wherein shield wires  
5 disposed in the cable assembly are terminated at one end by being glued to a component of the hearing aid device.
70. An apparatus as in claim 58, wherein the electronic  
10 circuit is tested and trimmed so that an acoustical output of the hearing aid device conforms to a standard for a range of acoustical inputs.
71. An apparatus as in claim 70, wherein trim information  
15 is stored in memory of the electronic circuit to compensate for a variation of a component disposed in the hearing aid device.
72. An apparatus as in claim 58, wherein the hearing aid  
20 device is used to test a hearing impaired patient that selects a preferred acoustical format, and a corresponding untethered hearing aid device programmed to a fixed format is dispensed to the patient.
73. An apparatus as in claim 72, wherein the untethered  
25 hearing aid device is disposable.
74. An assembly for use in a hearing aid device that fits in an ear, the assembly comprising an electronic component and a socket, whereby a portion of the

electronic component is formed to engage with a non-conductive portion of the socket.

75. An assembly as in claim 74, wherein the electronic component is a transducer.
- 5 76. An assembly as in claim 74, wherein the electronic component is a microphone.
77. An assembly as in claim 74, wherein the electronic component includes protruding conductive terminals and the socket includes receptacles for receiving the protruding conductive terminals.
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78. An assembly as in claim 77, wherein the conductive terminals are asymmetrically disposed on the socket so that each conductive terminal is plugged into a corresponding receptacle when the socket is engaged with the electronic component.
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79. An assembly as in claim 74, wherein the socket is cylindrically shaped and includes a terraced step for engaging with the electronic component.
- 20 80. An assembly as in claim 74, wherein the receptacles are pins that extend through a body of the socket so that a lead can be attached to a particular pin.